Assignment 5

Make sure to show all your work and fully explain your answers.

1. A boat can travel has a speed of 12 m/s relative to the shore. The boat is travelling in the same direction that the river is flowing. The river is flowing at 5 m/s relative to the shore. What is the boat's speed relative to the water?

2. If you are flying a toy airplane that is pointed in the opposite direction as the direction that the wind is blowing, will the speed of the airplane relative to the ground be greater than, equal to, or less than the speed of the wind relative to the ground? Or does it depend on other information? If so, what does it depend on? Explain your answer.

3. You are in a high-speed rocket and measure your pulse. Do you measure the pulse to be longer, shorter, or the same as if you were on Earth? Would you friend on Earth think your pulse while you are in the rocket is longer, shorter, or the same as if you were on Earth? Explain. Assume that your pulse is constant.

4. Consider Star A and Star B that explode on either side of the galaxy. These stars are